

Bennett et al  
USSN 09/942,353  
Filed August 29, 2001

### Remarks

Claims 1, 7, and 28 remain in the application. Claims 2-6 and 10-27 have been canceled.

Claims 1-7, 10-16, and 27-28 stand rejected under 35 U.S.C. § 103(a) for obviousness over PCT Publication WO 97/31783 to Ringle in view of U.S. Patent Nos. 5,368,974 to Walls et al. or 3,220,832 to Uhlig and further in view of U.S. Patent No. 5,759,742 to West et al and 6,165,689 to Vermersch et al. The following remarks are made in reference to claims 1, 7, and 28.

The present invention is directed to a lithographic sheet product having a non-anodized aluminum substrate and at least one pretreatment layer positioned on the top surface of the substrate. The pretreatment layer includes a polymer and about 4-50 wt. % dopant particles consisting of silica having a particle size of .02-5 microns. The polymer includes polymers of acrylic acid, organophosphorous polymers, and copolymers of an organophosphorous compound and acrylic acid or methacrylic acid. The large silica particles that are present in the polymer of the pretreatment layer are particularly suited for adhering a printing composition (an imaging layer) to the polymer and for making the polymer layer more receptive to water (hydrophilic). This particular combination of a non-anodized aluminum substrate and a pretreatment layer containing the polymer set forth in claim 1 and silica particles in a concentration of 4-50 wt. % having a particle size of .02-5 microns is not taught or suggested by the prior art of record.

Bennett et al  
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Claim 1 has been amended to incorporate the limitations of claims 3 and 6, which are now canceled. The subject matter of original claims 3 and 6 is directed to the embodiment of the invention disclosed in paragraph 12 of the specification. Claim 1 has also been amended to incorporate the limitations of original claim 11, which is now canceled. Support therefore appears in paragraph 29. The dependency of claim 27 has been changed accordingly. No new matter has been added.

In view of the amendment of claim 1, claims 1, 7, and 28 are believed to define over the combined teachings of Ringle, Walls or Uhlig, West and Vermeersch for the following reasons.

The Ringle patent teaches a micro-inch range surface roughness on an aluminum sheet in order to enhance the ability to hold lithographic coatings. All references, in Applicant's claims, to a micro-inch range surface roughness on an aluminum substrate have been eliminated. Applicant's invention uses a polymer layer with silica particles on an aluminum substrate rather than a micro-inch range surface roughness to enhance the adhesion of an imaging layer. The Ringle patent does not teach the use of a polymer layer with silica particles.

Each of the Uhlig and Walls patents discloses a printing plate having a mechanically roughened aluminum substrate bearing a hydrophilic polymeric adhesive layer onto which an image-forming coating is applied. The polymeric layer is used to adhere the image-forming layer on the substrate.

Bennett et al  
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The Applicant's invention claims a lithographic sheet product that includes a non-anodized aluminum alloy substrate having a polymer layer with silica particles on a surface of the aluminum substrate to enhance the adhesion of an image-forming layer to the substrate. Combining the hydrophilic polymeric adhesive layers present in Uhlig and Walls et al with the roughened surface of Ringle would not result in Applicant's invention. None of these patents teach or suggest the use of silica particles in the polymer layer to enhance the adhesion of an image forming layer to the substrate.

Vermeersch et al teaches the use of various particles of silica, titanium dioxide, and alumina to increase the mechanical strength and porosity of hydrophilic binder layers. Applicant claims the use of silica particles, having a particle size of .02-5 microns, in a hydrophilic polymer layer. At col. 5, lines 21-25 the patent indicates that the silica particles have an average particle size of up to 40 nanometers. The silica particles in Applicant's claims are much larger in size than those used in the Vermeersch patent. This larger size makes the surface of the polymer layer in Applicant's claims rougher than the surface of the polymer layer in the Vermeersch patent. This rougher surface would make the polymer more receptive to water and increase the adhesion of an image-forming layer as compared to the polymer surface with smaller silica particles that is taught in the Vermeersch patent. Combining the Vermeersch patent with the other cited references would result in a product that teaches away from Applicant's invention.

Bennett et al  
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In addition, the concentration of silica particles used in the hydrophilic layer is not disclosed in Vermeersch. The only particle concentration disclosed in the Vermeersch patent is with regard to the concentration of silicate present in the *developer*, not the hydrophilic layer. Applicant claims a range of concentration of silica particles in the hydrophilic layer as being about 4 to about 50 wt. %. No teaching or suggestion is present in Vermeersch or in any of the other cited references.

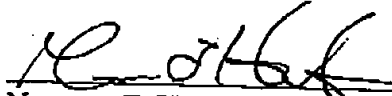
The West patent is cited for teaching materials other than aluminum, such as steel and polymers, as a substrate. Claim one was amended to include aluminum as the only possible substrate. The use of only aluminum as a substrate is not taught or suggested by the prior art of record.

In view of the amendment to claim 1 and for the foregoing reasons, reconsideration of the rejections and allowance of claims 1, 7, and 28 are respectively requested.

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It is respectfully submitted that the present application is in condition for allowance. If the Examiner would like to suggest changes of a formal nature to place this application in better condition for allowance, a telephone call to Applicants' undersigned attorney would be appreciated.

Respectfully submitted,

  
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